

Supplementary Tables

Supplementary Table 1. Unadjusted restricted mean survival time (RMST), median, and 5-year all-cause survival estimates for patients diagnosed with lung cancer, 2010-2019

	Never Smokers			Former Smokers			Current Smokers			TOTAL			
	RMST Through 5 years ^a	Median Survival	5-year survival	RMST Through 5 years ^a	Median Survival	5-year survival	RMST Through 5 years ^a	Median Survival	5-year survival	RMST Through 5 years ^a	Median Survival	5-year survival	Log-Rank Test
	(months)	(months)	%	(months)	(months)	%	(months)	(months)	%	(months)	(months)	%	p-value
Overall	32.1	29.0	33.6%	25.9	16.1	24.3%	23.3	13.0	19.7%	25.9	16.2	24.1%	
Sex													< .001
Female	35.0	39.3	36.6%	29.1	21.3	29.1%	25.8	15.5	24.1%	29.1	21.4	28.8%	
Male	25.9	16.4	27.2%	22.7	12.4	19.3%	20.5	10.8	15.3%	22.3	12.0	18.7%	
Race and Ethnicity													< .001
Asian	31.0	28.6	32.1%	22.7	12.3	19.5%	18.0	11.0	9.6%	24.4	14.9	21.6%	
Hispanic	32.0	25.7	38.9%	24.7	14.4	21.8%	21.5	14.5	11.6%	24.9	14.9	20.6%	
Native Hawaiian/Pac Islander	34.1	45.5	40.4%	24.8	13.4	25.7%	23.7	12.9	20.0%	25.6	15.2	25.5%	
Black	34.0	32.3	28.6%	29.7	23.3	28.6%	24.9	14.9	22.8%	28.2	19.7	26.3%	
White	32.5	29.3	35.4%	25.8	15.9	24.3%	23.7	13.2	21.0%	26.0	16.1	24.7%	
Other/UNK	22.9	16.5	13.0%	23.6	15.2	18.7%	15.7	6.3	8.0%	20.8	13.1	14.0%	
Age at Lung Ca Dx (years)													< .001
40 - 54	39.9	53.6	44.5%	31.4	25.4	31.5%	24.1	14.6	18.6%	29.6	23.4	27.7%	
55 - 64	38.4	45.1	44.3%	30.6	24.1	34.1%	26.6	18.4	25.4%	29.8	22.8	31.4%	
65 - 74	33.8	33.9	39.2%	28.0	18.5	27.1%	23.1	13.0	19.3%	27.1	16.8	25.9%	
75 - 89	25.5	17.5	21.1%	22.0	13.5	17.8%	18.3	7.9	13.2%	21.8	12.4	17.4%	
Yost State Quintile (census based)													< .001

Quintile 1 (lowest)	31.5	30.5	30.7%	25.6	15.8	21.4%	22.0	12.4	15.3%	24.8	15.2	19.9%	
Quintile 2	27.1	19.0	23.7%	23.8	14.3	20.1%	24.9	13.6	25.3%	24.6	14.7	22.2%	
Quintile 3	30.5	22.7	35.8%	26.0	17.6	22.6%	23.1	14.3	17.2%	25.6	17.0	22.2%	
Quintile 4	32.5	30.2	29.2%	26.4	16.7	26.4%	23.3	11.8	22.4%	26.5	16.6	26.0%	
Quintile 5 (highest)	36.7	45.1	43.8%	27.8	17.2	31.2%	24.2	13.4	24.2%	28.7	19.5	31.9%	
RUCA (census based)													< .001
Urban Focused	33.2	30.5	35.4%	26.4	16.7	25.6%	23.4	13.1	20.2%	26.3	16.7	25.2%	
Large Rural City/Town	28.4	24.1	18.5%	23.0	12.9	16.5%	21.0	11.7	17.5%	23.2	13.6	17.8%	
Small Rural Town focused/Isolated small rural	25.0	11.3	27.9%	23.2	13.3	16.6%	24.1	15.3	18.8%	23.8	13.6	18.9%	
Percent with associate degree or more (Census based)													0.007
Quartile 1 (Lowest)	29.5	23.0	28.9%	24.5	15.5	20.4%	23.4	13.0	20.0%	24.5	14.9	21.1%	
Quartile 2	30.3	26.2	25.9%	25.9	15.5	23.1%	22.7	13.6	18.3%	25.3	15.5	21.8%	
Quartile 3	32.3	28.5	38.9%	27.3	19.4	25.8%	23.3	12.6	21.7%	26.8	17.0	26.1%	
Quartile 4 (Highest)	34.7	31.9	39.0%	26.0	15.5	27.2%	24.1	13.5	20.2%	27.1	17.5	27.6%	
Percent Below Poverty, Census based, N (%)													< .001
Quartile 1 (Lowest)	35.5	41.4	39.6%	26.8	15.9	28.8%	24.3	12.7	22.4%	27.6	17.7	28.9%	
Quartile 2	33.3	33.9	36.7%	26.8	18.3	25.0%	22.7	13.5	20.5%	26.5	16.8	25.4%	
Quartile 3	29.4	23.6	29.6%	24.3	14.9	20.4%	24.3	15.2	19.2%	25.0	15.7	21.2%	
Quartile 4 (Highest)	27.9	22.4	24.0%	25.9	16.5	22.5%	22.2	11.7	18.0%	24.7	14.9	20.9%	

AJCC Stage														< .001
I	52.6	NA	76.1%	44.4	64.3	52.8%	45.8	67.0	53.2%	46.0	71.0	56.4%		
II	46.1	64.9	59.5%	34.5	34.0	33.1%	37.3	45.1	42.9%	36.8	38.2	39.5%		
III	30.4	28.3	19.4%	25.8	17.7	21.2%	25.3	18.3	17.3%	26.0	18.9	19.7%		
IV	17.4	9.7	7.6%	11.5	5.7	4.9%	11.0	5.8	3.8%	12.2	6.1	4.9%		
Missing/Unknown	29.8	20.7	24.8%	20.7	12.7	6.7%	23.2	9.6	19.8%	22.7	13.8	14.1%		
Histology														0.001
Adenocarcinoma	34.1	33.2	35.0%	29.7	22.5	29.7%	27.8	20.1	24.9%	30.0	23.6	29.4%		
Large Cell	NA	19.1	20.5%	24.0	19.5	16.9%	28.3	13.0	39.6%	26.0	19.1	29.5%		
NSCLC/Other	24.9	12.6	25.2%	20.7	10.0	19.6%	20.3	7.7	18.7%	21.0	9.4	20.1%		
Squamous	17.2	8.7	9.7%	27.2	19.1	22.5%	23.1	14.6	19.1%	25.2	16.7	20.4%		
Small cell	NA	10.2	3.4%	13.7	7.8	6.5%	15.8	9.5	8.9%	14.6	8.6	7.5%		
Carcinoids	53.3	NA	79.4%	43.0	67.6	59.9%	30.6	27.3	33.3%	46.0	NA	65.3%		
Modified Charlson Index ^b														< .001
0 – 1 condition	36.3	43.3	39.2%	30.2	21.7	32.0%	25.9	16.9	23.0%	29.8	21.7	30.2%		
2 or more conditions	29.6	24.0	30.3%	24.6	14.9	21.7%	22.1	11.5	18.5%	24.4	14.6	21.7%		
Receipt of Other First Course Therapy ^c														
Radiation	25.9	20.2	14.9%	25.5	17.2	19.9%	23.0	15.0	15.5%	24.7	16.6	17.9%	< .001	
Systemic Therapy	27.1	21.4	17.8%	23.9	15.2	17.5%	23.4	14.6	17.4%	24.1	15.3	17.5%	< .001	
Surgery	52.6	NA	75.0%	48.7	90.3	63.1%	47.5	74.9	61.0%	49.1	89.5	64.6%	< .001	
BMI Status as of Dx Date														< .001
< 25 (Underweight/Normal)	29.1	23.9	28.7%	22.3	12.0	19.6%	21.9	11.4	18.2%	22.9	12.3	20.1%		
25 - 29 (Overweight)	30.9	25.2	30.6%	26.8	17.3	24.7%	24.3	14.7	20.5%	26.6	17.3	24.3%		
30 + (Obese)	37.2	45.5	44.1%	30.2	22.7	30.5%	26.0	16.1	24.2%	30.4	23.3	31.2%		

Missing	27.5	9.2	15.0%	NA	6.5	8.1%	17.2	9.5	13.1%	16.9	9.2	9.4%	
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Abbreviations: NA = not applicable; NA = Not Applicable

^aThe coefficient value represents the number of additional months of survival gained or lost if the corresponding characteristics were present relative to the reference group for that covariate

^b Modified Charlson Comorbidity Index excludes HIV/AIDS diagnoses

^c First Course Therapy as documented in Tumor Registry data

Supplementary Table 2. Multivariable Adjusted Restricted Mean Survival Time among patients with Adenocarcinoma histology^a

	Never Smokers (N = 587)	Former Smokers (N = 1714)	Current Smokers (N = 864)	All Adenocarcinoma Histology
	Coefficient (95% CI) ^b	Coefficient (95% CI) ^b	Coefficient (95% CI) ^b	Coefficient (95% CI) ^b
Intercept	40.4 (30.4 to 50.3)	38.4 (31.8 to 45.0)	39.3 (32.2 to 46.5)	41.7 (36.9 to 46.4)
Smoking Status				
Never	NA	NA	NA	Ref
Current	NA	NA	NA	-3.8 (-6.1 to -1.6)
Former	NA	NA	NA	-3.4 (-5.4 to -1.5)
Sex				
Female	Ref	Ref	Ref	Ref
Male	-5.2 (-9.0 to -1.4)	-2.6 (-4.6 to -0.5)	-3.4 (-6.0 to -0.7)	-3.4 (-4.9 to -1.9)
Race and Ethnicity				
White	Ref	Ref	Ref	Ref
Asian	-2.8 (-9.1 to 3.5)	-2.4 (-7.6 to 2.8)	1.0 (-6.8 to 8.7)	-0.8 (-4.3 to 2.8)
Native Hawaiian / Pacific Islander	-3.6 (-14.3 to 7.1)	1.6 (-4.8 to 7.9)	4.4 (-3.5 to 12.3)	1.3 (-3.3 to 5.9)
Hispanic	-2.6 (-12.5 to 7.4)	0.7 (-4.9 to 6.4)	-3.1 (-9.1 to 3.0)	-0.5 (-4.6 to 3.5)
Black	3.1 (-3.6 to 9.7)	3.4 (-0.2 to 7.0)	1.9 (-2.1 to 5.9)	2.9 (0.4 to 5.4)
Other/Unknown	-4.5 (-13.3 to 4.3)	-0.01 (-4.5 to 4.4)	-6.2 (-10.8 to -1.5)	-2.4 (-5.5 to 0.7)
Age at Lung Ca Dx (years)				
75 – 89	Ref	Ref	Ref	Ref
40 – 54	7.7 (1.5 to 14.0)	8.0 (2.6 to 13.3)	1.6 (-3.4 to 6.6)	4.8 (1.8 to 7.9)
55 - 64	7.2 (2.5 to 11.9)	-0.3 (-3.2 to 2.5)	4.3 (0.5 to 8.1)	2.8 (0.8 to 4.9)
65 - 74	0.8 (-3.1 to 4.8)	1.1 (-1.2 to 3.3)	-0.9 (-4.7 to 2.8)	0.6 (-1.1 to 2.4)
Yost State Quintile (census based)				
1 (lowest)	Ref	Ref	Ref	Ref
2	-1.2 (-6.7 to 4.3)	1.0 (-2.0 to 4.1)	5.2 (1.3 to 9.2)	1.9 (-0.3 to 4.1)
3	0.5 (-5.3 to 6.3)	2.2 (-1.0 to 5.4)	2.4 (-1.3 to 6.1)	1.9 (-0.4 to 4.1)
4	0.5 (-4.6 to 5.5)	2.4 (-0.8 to 5.7)	6.1 (1.9 to 10.3)	3.1 (0.8 to 5.4)
5 (highest)	3.7 (-1.7 to 9.2)	3.6 (0.2 to 7.0)	2.3 (-2.1 to 6.8)	3.4 (0.9 to 5.8)

RUCA (census based)				
Urban Focused	Ref	Ref	Ref	Ref
Large Rural City/Town	-0.8 (-8.3 to 6.7)	1.4 (-4.4 to 7.3)	-3.6 (-11.2 to 4.0)	-0.3 (-4.3 to 3.8)
Small Rural Town focused/Isolated small rural	1.6 (-7.7 to 11.0)	2.1 (-4.1 to 8.3)	-1.0 (-9.9 to 7.8)	1.1 (-3.4 to 5.6)
AJCC Stage at Diagnosis				
I	Ref	Ref	Ref	Ref
II	-10.8 (-18.7 to -2.9)	-12.0 (-16.6 to -7.5)	-9.6 (-16.0 to -3.2)	-11.4 (-14.7 to -8.0)
III	-19.3 (-26.7 to -11.9)	-17.2 (-21.3 to -13.0)	-19.5 (-25.0 to -14.0)	-18.3 (-21.3 to -15.2)
IV	-35.6 (-42.5 to -28.7)	-29.0 (-32.5 to -25.6)	-33.3 (-37.8 to -28.9)	-30.9 (-33.5 to -28.3)
Other/Unknown	-15.0 (-24.3 to -5.7)	-16.6 (-22.6 to -10.6)	-18.5 (-25.6 to -11.4)	-16.7 (-20.9 to -12.5)
Clinical Conditions				
No Previous non-lung cancer	Ref	Ref	Ref	Ref
Previous non-lung cancer	-5.3 (-10.2 to -0.4)	0.00 (-2.9 to 2.9)	-4.8 (-8.5 to -1.2)	-2.0 (-4.1 to 0.1)
Charlson Co-morbidity Index ^c				
0 – 1 condition	Ref	Ref	Ref	Ref
2 or more conditions	-2.3 (-6.2 to 1.7)	-3.0 (-5.3 to -0.7)	-1.8 (-4.8 to 1.2)	-2.6 (-4.3 to -0.9)
Receipt of Other First Course Therapy ^d				
No Radiation	Ref	Ref	Ref	Ref
Radiation	-2.5 (-7.1 to 2.1)	1.2 (-1.2 to 3.7)	0.4 (-2.8 to 3.6)	0.1 (-1.7 to 1.9)
No Surgery	Ref	Ref	Ref	Ref
Surgery	5.3 (-0.9 to 11.4)	15.2 (11.9 to 18.6)	11.7 (7.2 to 16.2)	12.9 (10.4 to 15.4)
No Systemic Therapy	Ref	Ref	Ref	Ref
Systemic Therapy	9.5 (5.5 to 13.4)	8.1 (5.6 to 10.5)	10.0 (7.0 to 12.9)	9.0 (7.3 to 10.7)
BMI Status at diagnosis				
< 25 (Underweight/Normal)	Ref	Ref	Ref	Ref
25 – 29 (Overweight)	-1.4 (-5.4 to 2.7)	1.9 (-0.3 to 4.2)	0.8 (-2.3 to 3.9)	1.1 (-0.5 to 2.8)
30 + (Obese)	1.7 (-2.6 to 6.0)	1.9 (-0.7 to 4.5)	2.1 (-1.6 to 5.8)	1.8 (-0.1 to 3.7)
Unknown	6.9 (-14.9 to 28.6)	-11.5 (-25.2 to 2.2)	-8.6 (-17.1 to -0.1)	-5.0 (-12.0 to 1.9)

Abbreviations: Ref = reference group in multivariable model.

^a Results mutually adjusted for year of diagnosis and healthcare system in addition to all variables listed in the table

^b The coefficient value represents the number of additional months of survival gained or lost if the corresponding characteristics were present relative to the reference group for that covariate.

^c Modified Charlson Comorbidity Index excludes HIV/AIDS diagnoses

^d First Course Therapy as documented in Tumor Registry data

Supplementary Table 3. Multivariable models of restricted mean lung cancer cause of death survival time through 5 years from time of diagnosis stratified by Smoking Status^a

	Patients who Never Smoked	Patients who Formerly Smoked	Patients who Currently Smoke	All Lung Cancer Patients	Smoking Status Comparison
	Coefficient (95% CI) ^b	Coefficient (95% CI) ^b	Coefficient (95% CI) ^b	Coefficient (95% CI) ^b	Interaction P-value
Intercept	36.3 (25.8 to 46.7)	40.1 (34.9 to 45.4)	39.4 (33.3 to 45.5)	41.5 (37.4 to 45.6)	
Smoking Status					
Never	NA	NA	NA	Ref	
Current	NA	NA	NA	-3.8 (-5.9 to -1.7)	
Former	NA	NA	NA	-2.1 (-4 to -0.3)	
Sex					0.047
Female	Ref	Ref	Ref	Ref	
Male	-1.3 (-4.9 to 2.2)	-1.6 (-3.3 to 0.1)	-4.6 (-6.7 to -2.5)	-2.7 (-3.9 to -1.4)	
Race and Ethnicity					0.38
White	Ref	Ref	Ref	Ref	
Asian	-3.2 (-9.2 to 2.9)	1.4 (-2.8 to 5.6)	-2.1 (-8.4 to 4.2)	0.5 (-2.6 to 3.5)	
Hispanic	-4.3 (-14.9 to 6.4)	3.5 (-1.6 to 8.6)	3.4 (-2.4 to 9.2)	2.7 (-0.996 to 6.3)	
Native Hawaiian/Pacific Islander	-1.3 (-8.8 to .2)	2.1 (-2.3 to 6.5)	-3.0 (-7.6 to 1.7)	-0.4 (-3.4 to 2.7)	
Black	7.4 (1.7 to 13.2)	3.2 (-0.3 to 6.7)	0.9 (-2.6 to 4.5)	3.0 (0.7 to 5.3)	
Other/Unknown	2.4 (-4.7 to 9.5)	0.5 (-3.5 to 4.5)	-5.6 (-9.7 to -1.4)	-1.5 (-4.2 to 1.2)	
Age at Lung Ca Dx (years)					0.12
75 - 89	Ref	Ref	Ref	Ref	
40 - 54	8.0 (2.0 to 13.9)	6.4 (1.6 to 11.1)	2.5 (-1.8 to 6.9)	4.9 (2.1 to 7.7)	
55 - 64	6.0 (1.3 to 10.6)	1.5 (-1.0 to 4.0)	4.0 (0.993 to 7.1)	3.7 (1.9 to 5.4)	
65 - 74	2.2 (-1.6 to 6.0)	2.2 (0.3 to 4.0)	-0.2 (-3.0 to 2.7)	1.7 (0.3 to 3.1)	
Yost State Quintile (census based)					0.06
Yost 1 (lowest)	Ref	Ref	Ref	Ref	
Yost2	-0.9 (-5.7 to 3.9)	0.9 (-1.6 to 3.3)	3.9 (0.9 to 6.9)	1.7 (-0.1 to 3.4)	
Yost3	5.6 (0.5 to 10.8)	-0.1 (-2.7 to 2.4)	0.4 (-2.7 to 3.4)	0.6 (-1.2 to 2.5)	
Yost4	5.3 (0.5 to 10.1)	1.7 (-1 to 4.3)	2.4 (-1.0 to 5.8)	2.4 (0.4 to 4.3)	

Yost5 (Highest)	6.0 (1.03 to 11.0)	3.3 (0.5 to 6)	1.2 (-2.7 to 5.1)	3.2 (1.2 to 5.3)	
RUCA (census based)					0.42
Urban Focused	Ref	Ref	Ref	Ref	
Large Rural City/Town	-4.2 (-11.8 to 3.4)	-0.3 (-4.7 to 4.1)	3.3 (-2.1 to 8.7)	0.2 (-3.0 to 3.3)	
Small Rural Town focused/Isolated small rural	-5.6 (-13.8 to 2.5)	0.4 (-4.5 to 5.3)	5.3 (-0.5 to 11.2)	1.2 (-2.2 to 4.7)	
AJCC Stage at Diagnosis					0.60
I	Ref	Ref	Ref	Ref	
II	-8.3 (-14.3 to -2.3)	-12.1 (-15.7 to -8.4)	-13.1 (-18.3 to -7.8)	-11.9 (-14.6 to -9.2)	
III	-22.6 (-29.4 to -15.8)	-18.2 (-21.5 to -15.0)	-23.4 (-27.7 to -19.0)	-20.4 (-22.8 to -17.9)	
IV	-34.6 (-40.7 to -28.5)	-30.4 (-33.2 to -27.6)	-33.8 (-37.6 to -30.1)	-31.7 (-33.8 to -29.6)	
Other/Unknown	-15.1 (-23.2 to -7.0)	-10.7 (-15.2 to -6.2)	-18.2 (-24.0 to -12.4)	-13.4 (-16.7 to -10.1)	
Histology					0.15
NSCLC/Other	Ref	Ref	Ref		
Adenocarcinoma	3.3 (-1.4 to 8.0)	2.2 (-0.2 to 4.7)	1.7 (-1.4 to 4.9)	2.3 (0.6 to 4.1)	
Large Cell	-4.5 (-18.2 to 9.2)	-4.1 (-12.1 to 3.9)	-0.1 (-10.3 to 10.1)	-3.5 (-9.4 to 2.4)	
Squamous	-4.4 (-11.9 to 3.1)	-0.4 (-3.2 to 2.4)	-2.3 (-5.8 to 1.2)	-1.3 (-3.4 to 0.8)	
Small cell	-8.4 (-16.5 to -0.4)	-5.6 (-8.7 to -2.5)	-2.5 (-6.0 to 1.1)	-4.1 (-6.3 to -1.9)	
Carcinoids	8.9 (2.9 to 14.9)	4.4 (-1.0 to 9.7)	9.3 (-0.4 to 19.1)	5.5 (2.0 to 9.0)	
Clinical Conditions					0.14
No previous non-lung cancer	Ref	Ref	Ref	Ref	
Previous non-lung cancer	-0.5 (-5.0 to 4.1)	4.1 (1.7 to 6.5)	2.4 (-0.9 to 5.7)	3.1 (1.3 to 4.9)	
Modified Charlson Co- morbidity Index ^c					0.10
0-1 condition	Ref	Ref	Ref	Ref	
2 or more conditions	-0.9 (-4.5 to 2.8)	-3.9 (-6.0 to -1.7)	-0.1 (-2.5 to 2.3)	-2.1 (-3.6 to -0.6)	
Receipt of Other First Course Therapy ^d					
No Radiation	Ref	Ref	Ref	Ref	

Radiation	-0.2 (-4.6 to 4.3)	2.4 (0.4 to 4.3)	2.2 (-0.3 to 4.6)	1.8 (0.3 to 3.2)	0.96
No Surgery	Ref	Ref	Ref	Ref	
Surgery	3.8 (-1.6 to 9.3)	15.7 (13.0 to 18.4)	13.4 (9.4 to 17.4)	13.4 (11.3 to 15.5)	0.002
No Systemic Therapy	Ref	Ref	Ref	Ref	
Systemic Therapy	5.3 (1.2 to 9.5)	6.6 (4.5 to 8.7)	7.8 (5.3 to 10.3)	7.0 (5.5 to 8.5)	0.66
BMI Status at diagnosis					0.68
< 25 (Underweight/Normal)	Ref	Ref	Ref	Ref	
25 – 29 (Overweight)	1.1 (-2.9 to 5.0)	1.7 (-0.3 to 3.6)	-0.3 (-2.7 to 2.2)	1.1 (-0.3 to 2.6)	
30 + (Obese)	1.7 (-2.2 to 5.6)	3.1 (0.9 to 5.3)	-0.3 (-3.3 to 2.7)	2.0 (0.4 to 3.6)	
Unknown	0.5 (-40.4 to 41.3)	-6.7 (-21.7 to 8.3)	-13.3 (-24.3 to -2.4)	-9.8 (-19.4 to -0.2)	

Abbreviations: Ref = reference group in multivariable model.

^a Results mutually adjusted for year of diagnosis and healthcare system in addition to all variables listed in the table

^b The coefficient value represents the number of additional months of survival gained or lost if the corresponding characteristics were present relative to the reference group for that covariate.

^c Modified Charlson Comorbidity Index excludes HIV/AIDS diagnoses

^d First Course Therapy as documented in Tumor Registry data